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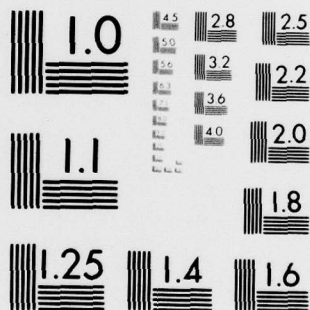
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PREPARED BY:

TRANSLATION DIVISION
FOREIGN TECHNOLOGY DIVISION
WP.AFB, OHIO.

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News in Aero-science and Technology

Air-borne Antitank Mine

In the past, antitank mine was laid from ground, but now a method of laying it from air has been available. The US air force weapon development center has been engaged in designing and manufacturing an airdrop "Geiter" * antitank mine for the US army, navy and air force. The antitank mine, as expected, would be put to use by 1979.

The hollow charge method is applied to the airdrop antitank mine, so the mine is very powerful and able to destroy the bottom of a tank. The mine of this kind, like a time bomb, is equipped with a self-destruction device, if it cannot encounter a target for a certain period of time, it will explode automatically, so that the troops of its own side can pass through the mine field. The mine can be laid by a fixed-wing aircraft or a helicopter. The air force has planned to use an all-altitude (various altitudes) revolving launcher to lay the mine, and the navy plans to use MK-7 throw-out unit to lay it. For the convenience of a helicopter to lay mine, a rotor mine-layer has been specially manufactured. The antitank mine has a good aerodynamic appearance, when it is being dropped, it can revolve downward.

Oil-gas Bomb

An oil-gas bomb is also called combustion-air bomb. Some Chinese call

* A transliteration of the Chinese words in the text

it air-wave bomb. After being dropped, the bomb will first emanate oil-gas like clouds, then through the action of a fuse it explodes. The explosion can produce a strong shock wave, which constitutes the destruction power of the bomb. Because it is an air wave, not only can it destroy defence works on the ground, it can also penetrate into trenches and other kinds of covering works, so its killability to ground troops is very strong. In the past, this kind of bomb required to reduce its speed by a parachute before explosion, so it was not convenient to be used. But now the dropping method has been improved and it can be dropped in the manner of high speed dive-bombing.

The US navy uses precise proximity fuse to set their oil-gas bomb off, and the bomb can explode at a set altitude from the ground. The US air force uses an extendable oil pipe and proximity explosion sensor to spray oil-gas and detonator. The oil-gas bomb used by the US air force can be classified into two different kinds: one is weighted 500 pounds (about 225 kilograms) and the other is weighted 2000 pounds (about 907 kilograms). The code name of the 500-pound bomb is HSF-1, and it is an inexpensive and unguided weapon which can be carried by an ordinary bomb holder. The code name of the 2000-pound bomb is HSF-11, and there are guided and unguided two different kinds. This bomb is good for use to destroy radar carriers and landed aircrafts.

In addition, oil-gas bomb of smaller size is now under study. The

small oil-gas bomb can be used to destroy covering installations, trenches and targets of the air-support units at short distance.

Tracking Aircraft on Satellite

According to the report of a journal, "Fei-hsing" (Flight), of December 3, 1977, published in England, that the US advanced articles agency has signed a contract with Rockwell Company to study manufacturing a tracking aircraft system installed on a satellite. It is a passive infrared system and can be used to detect and to track "back fire" bombers and cruise missiles. The cost for the first stage basic technological research is twenty million dollars. The second stage will be making model aircraft. The model will be tested by using space aircraft in March of 1981. According to an estimate, it is possible to use the aircraft to detect and track "back fire" bomber but it is hardly possible to detect and track cruise missiles.

The Flight Test of French "Phantom-2000"

This aircraft is manufactured by Dasu Bleigai* Company in France, and it is expected to be put to use by middle 1982. On March 10 of this year, the first prototype aircraft of "Phantom-2000" took its flight test at I-s-er * airfield in France. Jie-en Kulo*, the head pilot of the company conducted the test. The flight lasted for one hour and five minutes. Its

* Transliterations of Chinese words in the text.

maximum M number reaches 1.3 and its altitude reaches 12,192 metres.

"Phantom-2000" is an aircraft with delta wings. Its total weight is about ten tons and its power unit is made of a M-53 turbofan engine. There are five hangers in the craft. The airborne weapons in the craft to be used for interception include, besides a 30mm aircraft cannon, two Materla* super 530 air-to-air missiles and two Materla * 550 short range combat missiles. The flight speed M number is 2.2 and its combat ceiling is 18,000 metres. The climbing rate can double that of "Phantom-111" and its flying distance increases by 30% compared with "Phantom-111".

The thrust-to-weight ratio of this craft is 1, and it can be refueled air-to-air. The electronic units in this craft include one inertial navigation system; one pulse Doppler radar which can look downward and of which the searching range is 100 kilometres; one digital central fire controlled computer; and one horizontal display unit.



Missiles Launched From Outside of Enemy Defence Circle

This kind of missile is subsonic missile and its power unit is made of turbojet engine. It can be launched outside enemy's defence circle from a

* Transliterations of Chinese words in the text

manned aircraft. By having the center as well as the end of the trajectory guided with high precision, it directs toward target of long distance. This weapon not only can independently attack fixed targets and can also subdue enemy's defence fire power. The US air force believes that to use this kind of missile can minimize the loss of manned aircrafts. Such aircrafts as F-4, F-111, A-10 and B-52 can all carry missiles launched from outside of enemy's defence circle.

The Japanese Will Manufacture Ocean Observation Satellite

The Japanese Science and Technology Ministry is planning to manufacture a satellite, of which the function will be similar to that of the US earth satellite to make ocean observation. They have planned to launch such a satellite in 1983. The decision is made in response to the suggestion of a telemetry center. The satellite will be named as Ocean Observation Orbiter No.1 (MOS-1) and its launching weight will be 600 kilograms. The satellite will be equipped with infrared radiation and microwave tele-sensor, so it can measure the situations of tide, the distribution of plantons and the pollution of the sea from an altitude of 500 kilometres.

The Flight Test of Three New Soviet Aircrafts

According to the report of a journal, Kuo-chi fang-wu ping-lun (review of international defence affairs), published in Switzerland, that the Soviets are making flight test of prototype aircraft of three combat aircrafts. These three different kinds of aircrafts are MIG-29 pursuit plane, T-58 attacker

and supersonic bomber.

MIG-29 pursuit plane designed by the Mikoyan design bureau is now making flight test. The Soviets are planning to use this plane to deal with the US F-15, F-16 and F-18. Viewed from its aerodynamic appearance, MIG-29 looks like a small-sized MIG-25 or F-15. It is smaller and lighter than F-15 and has one single-seat cabin, double vertical tails and two engines. Its wings resemble those of F-15. As the combat weight of this plane counts in (50% of internal fuel and four air-to-air missiles), the thrust-weight ratio is 1.1. There are six hangers in the plane and it can carry four AA-7 "chien-ting" (pointed top) type and two "Aphid" type air-to-air missiles. It is estimated that this plane, in addition to being able to fight against F-15 and F-16, can be used to intercept the low altitude penetrating aircraft such as F-111, "kuang-feng" (violent wind) or B-1 and cruise missiles.

In early 1980's, when group production is put into practice, the Soviets will use this plane to equip their front air forces.

T-58 attacker designed by the Suhuovi* design bureau is similar to the US A-10 attacker. The main features of this plane are able to make low altitude flight and its flight speed is relatively low, and it is equipped with bullet-proof armour. They say that its outer hanging capability is rather strong so it can carry bombs and such newly made air-to-ground missiles as AS-8, AS-9 and AS-10. But there has been so far no way to prove whether or not it can carry heavy caliber "Geoterlin" type airborne cannon

* Transliterations of Chinese words in the text.

like that which can be carried by aircraft A-10.

The supersonic bomber is made by way of transforming the Tu-144 supersonic civil transportation plane. Besides double-delta wings, it is added fixed "duck" type front wings. The size of this plane and its take-off weight are similar to those of the Tu-26 supersonic bomber.

YAH-64 Armed Helicopter

YAH-64 is a prototype armed helicopter, which was designed and manufactured by Hughes Company based on the advanced attack helicopter of the US army. It has four rotary wings, four tail rotors, wingstub and four hangers. There is a design of two-seat connection, the pilot sits in back and the copilot is in front of him. Its power unit is made of T-700-GE700 two turbo-axis engines and each engine is of 1,536 horse-power. These engines are made by General Electric Company. The maximum velocity of this helicopter is 378 kilometres per hour and its sea-level climbing rate is 14.5 metres per second. Its total basic mission weight is 6,270 kilograms and its maximum take-off weight is 8,390 kilograms.

According to the report of a journal, Kuo-chi hang kung (international aviation) of August, 1978, published in Switzerland, that after some contest flight tests, the US army, on December 10, 1976, announced to select YAH-64 as advanced attack helicopter. However, further study of the helicopter



will continue till 1980 and it will help to solve the problems of weapon matching and a definite form for production. From December of 1980, its second stage will begin and group production can be carried out. Originally this helicopter

was prepared to carry 16 "Tao"* type antitank missiles, but now the US army has decided to carry laser-guided antitank missiles instead. Probably troops cannot be equipped with this helicopter until 1982. The above picture is a YAH-64 helicopter carrying Hailfa* missiles, and these missiles are not real. It is said that the real fire power test of this missile cannot be made until 1979.

* Transliterations of Chinese word in the text

Laser Landing Equipment

The Soviets has recently announced that they are engaged in making a laser landing equipment and that they have tested several thousands times. This landing system uses three visible laser beams. One beam is emitted from the centre of the runway and the other two from the edges of the runway. Three laser beams form a downward-taxi track. When an aircraft is 20 kilometres away from the runway, it can see the laser beams. Using laser landing system, an aircraft need not carry airborne landing equipment. When it is landing, the pilot is only required to keep the aircraft on the laser beam taxi track, then it can land safely.

New Jet Fuel

The Lander* Company in the United States is now engaged in a study of the fuel of jet engine. The study covers two aspects: to try to improve the currently used engines so as to reduce the consumption rate of oil, and to study new jet fuel.

The company assumes that to use new type engine, which has a low rate of oil consumption, can save fuel by 20-30%, but the cost of making such new engine is rather high. It needs further study to find out whether this is worth trying. The energy sources in America will gradually become scarce. According to an estimate, 25-50 years later, the crude oil consumed in the United States will totally depend upon import from abroad. So it is absolutely necessary now to begin to study new jet fuel.

The new fuel being studied by Lander* Company includes liquid hydrogen, liquid methane and artificially synthetized fuel. Liquid hydrogen and liquid methane are frozen fuel and very expensive, and it is not easy to store and transport, so the company thinks that the most practical new fuel would be the artificially synthetized fuel.

* Transliterations of Chinese words in the text

Ultraviolet-measuring Satellite

On January 26, 1978, the United States launched an "international ultraviolet explorer" satellite. It is an ultraviolet radiation measuring satellite and its purpose is to obtain ultraviolet radiation data of high

recognition rate. The analysis of celestial spectrum can thereby be carried out. The weight of the satellite is 672 kilograms.

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